

REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars.

1. In the claims

As shown in the foregoing LIST OF CURRENT CLAIMS, the claims have been amended to more clearly point out the subject matter for which protection is sought.

Claim 1 is amended to incorporate features of claims 4, 5, and 18 and to clarify the recited structure of the cooling element. It is respectfully submitted that no new matter is added, since the changes merely merge the subject matter of previously presented claims and support for the amendments may be found, for example, at least in Figs. 1 through 14, and in particular in Figs. 1-5, directed to species A, of the pending application and at least on page 8, lines 1-13 and page 9, lines 20-22 of the accompanying description in the specification as originally filed.

Claims 4 and 18 are canceled and the subject matter thereof added to claim 1.

Claim 5 is amended to be consistent with amended claim 1.

Claim 6 is amended to be consistent with amended claim 1.

Claim 12 is amended to depend from claim 5 instead of canceled claim 4.

Claims 2, 3, 7, 13, 14, and 17 are left unchanged.

Claims 8-11, 15, and 16 are withdrawn from further consideration.

Entry of the LIST OF CURRENT CLAIMS is respectfully requested in the next Office communication.

2. Election

The election of claims 1-7, 12-14, 17, and 18, and the withdrawal of claims 8-11, 15, and 16 from further consideration is acknowledged.

It is respectfully submitted that at least amended claim 1 remains generic to all of species A-D. Accordingly, it is respectfully requested that claims 8-11, 15, and 16

be rejoined upon the allowance of claim 1. Further, it is respectfully requested that when claim 15 is rejoined, claim 15 be amended to depend from claim 5, instead of canceled claim 4.

3. Rejection of claims 1-6, 12-14, 17, and 18 under 35 U.S.C. § 102(b) as being anticipated by EP 1 251 624 A2 (*Le Flem et al.*)

Reconsideration of this rejection is respectfully requested, in view of the amendments to claim 1, on the basis that the *Le Flem* publication fails to disclose each and every recited element of amended claim 1. The remaining claims depend from claim 1, and are therefore patentable as containing all of the recited elements of claim 1, as well as for their respective recited features.

By way of review, the embodiment of amended claim 1 requires a cooling arrangement for an electric motor or generator that includes a housing, a slotless tubular stator lamination, a rotor with permanent magnets and electric windings which are provided between the stator lamination and the rotor. The cooling arrangement includes a cooler upon which the windings are provided. The cooler includes a mainly cylindrical cooling element provided between the stator lamination and the rotor. The cooling element has one or several axially extending passages defined therein, the passages defining a space for a cooling fluid. The cooling element is provided on an inner wall thereof with teeth directed radially towards the rotor and which extend in an axial direction of the stator and in between which axially directed grooves are defined, such that the cooling element has an external form of a conventional stator lamination with teeth for providing the windings. Thus, the windings are provided on the cooler within the grooves between the teeth and are separated from the space inside the passages to prevent contact between the windings and the cooling fluid.

A number of advantages are obtained with the configuration of the cooling arrangement for an electric motor or generator according to the embodiment of amended claim 1. One advantage is that by using a cooling element that has an external form that corresponds to the shape of a conventional stator lamination with teeth, electric windings can be provided in a very simple manner in the grooves

around the teeth. Since the cooling element has an external form that corresponds to the shape of a conventional stator lamination with teeth, the windings can be placed in the same manner as is used to place windings in a conventional stator lamination, and thus, no special tooling or additional equipment is required to manufacture the cooling arrangement for an electric motor or generator according to the embodiment of amended claim 1.

Additionally, since the electrical windings are provided upon the cooler, within the grooves between the teeth, the windings are not in direct contact with a cooling fluid passing through the cooling element. Therefore, the risk of possible short circuits is eliminated.

Turning to the *Le Flem* publication, a configuration for cooling of air gap windings of electrical machines is disclosed. An annular fluid-tight tank 12 encloses the stator 5 and partitions the rotor 4 from the stator (Figure 1; paragraph [0021]). The stator includes a winding 13 having a number of coils and a laminated iron core 14 (paragraph [0021]). Support teeth or struts 20A, 20B, 320 are provided to replace the laminated iron teeth of a conventional arrangement for a laminated stator (paragraph [0027]). Conductor bundles 16 (windings) are held in position and supported by the support teeth or struts 20A, 20B, 320 (paragraph [0027]).

In the configuration utilizing the support strut 320, grooves 323 are provided in the external surface thereof to provide coolant in direct contact with the insulation of the conductor bundles (paragraphs [0010], [0011], [0012], and [0042]). This is in contrast to the embodiment of amended claim 1, which requires the windings to be separated from the space inside the passages to prevent contact between the windings and the cooling fluid.

Turning to the configuration utilizing the support teeth or struts 20A, 20B, open ended channels 24 are defined therein to allow a cooling medium to pass therethrough (paragraphs [0032], [0033]). The cooling medium is supplied to the channels 24 via the immersion of the conductor bundles 16 and support teeth or struts 20A, 20B within the cooling medium inside the fluid-tight tank 12, which includes an inlet manifold 38 and an outlet manifold 40 (Figure 1; paragraph [0032]).

Thus, in contrast to amended claim 1, which requires a cooler upon which windings are provided, the *Le Flem* publication discloses a cooler (fluid-tight tank 12) that has the windings provided internally thereof. Thus, since the embodiment of amended claim 1 requires the windings to be provided on the cooler, and not within the cooler, the *Le Flem* publication fails to disclose every feature of amended claim 1.

Further, the *Le Flem* publication fails to disclose a cooling element having an external form of a conventional stator lamination with teeth for providing the windings, as is required by amended claim 1.

As discussed above, the *Le Flem* publication discloses support teeth or struts 20A, 20B, 320 that are provided to replace the laminated iron teeth of a conventional arrangement for a laminated stator (paragraph [0027]). Thus, the cooling element (fluid-tight tank 12) fails to have an external form of a conventional stator lamination with teeth for providing the windings, as is required by amended claim 1.

As is recognized in the International Preliminary Report on Patentability in corresponding PCT application PCT/BE2004/000158, assembling a machine with the multiple independent cooling tubes described in the *Le Flem* publication is more time consuming and complex than to use the cooling element having the external form of a conventional stator lamination with teeth for providing the windings, as is recited in amended claim 1.

Additionally, since the support teeth or struts 20A, 20B, 320 disclosed in the *Le Flem* publication are provided in a loose manner, mounting electrical windings upon the loose support teeth or struts is particularly cumbersome.

For the reasons discussed above, it is respectfully submitted that the *Le Flem* publication fails to disclose every feature of amended claim 1, and withdrawal of this rejection is respectfully requested.

As mentioned above, applicants submit that independent claim 1 is patentable and therefore, claims 2, 3, 5, 6, 12-14, and 17, which depend from claim 1, are also considered to be patentable as containing all of the elements of claim 1, as well as for their respective recited features.

4. Allowable subject matter

The applicant gratefully acknowledges the indication of allowable subject matter in claim 7. However, in view of the above amendments to claim 1, the subject matter of claim 7 has not been rewritten in independent form to include all the features of the base claim and the intervening claims.

5. Conclusion

As a result of the amendment to the claims, and further in view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is respectfully requested that every pending claim in the present application be allowed and the application be passed to issue.

If any issues remain that may be resolved by a telephone or facsimile communication with the applicant's attorney, the examiner is invited to contact the undersigned at the numbers shown below.

BACON & THOMAS, PLLC  
625 Slaters Lane, Fourth Floor  
Alexandria, Virginia 22314-1176  
Phone: (703) 683-0500  
Facsimile: (703) 683-1080

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Respectfully submitted,  
  
/Patrick M. Buechner, Reg. #57,504/

PATRICK M. BUECHNER  
Attorney for Applicant  
Registration No. 57,504